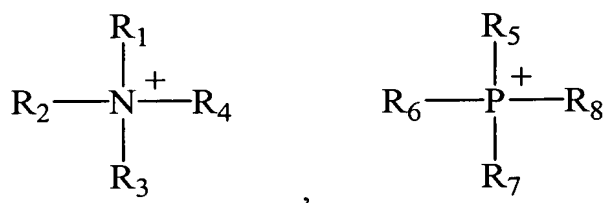
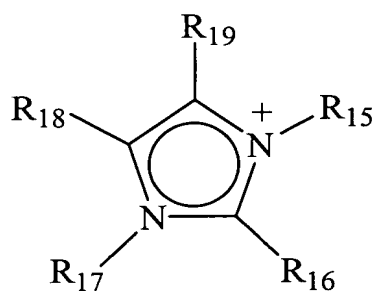
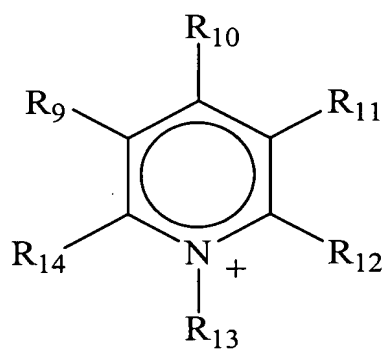


### Amendments to the Claims

Please amend the claims as follows:

1. (currently amended) A catalyst system ~~comprising~~ consisting essentially of an ionic liquid dispersed on a porous support having an average pore diameter greater than about 225 Å; wherein said ionic liquid comprises a cation and an anion; and wherein said anion consists ~~essentially~~ of halides of elements selected from the group consisting of: Group 13 (IIIA) metals, zinc, iron ~~and~~, phosphorus, boron, and combinations thereof.
2. (original) A catalyst system in accordance with claim 1 wherein said support has a surface area less than about 700 m<sup>2</sup>/gram.
3. (original) A catalyst system in accordance with claim 1 wherein said support is non-crystalline.
4. (currently amended) A catalyst system in accordance with claim 1 wherein said support is non-crystalline and has a surface area less than about 700 m<sup>2</sup>/gram; ~~and wherein said anion consists of halides of elements selected from the group consisting of: Group 13 (IIIA) metals, zinc, iron, and phosphorus, and combinations thereof.~~
5. (original) A catalyst system in accordance with claim 1 wherein said support is silica.
6. (previously presented) A catalyst system in accordance with claim 1 wherein said cation is selected from the group consisting of ions defined by the formulas:





and combinations of any two or more thereof, wherein:

R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>5</sub>, R<sub>6</sub>, and R<sub>7</sub> are selected from the group consisting of saturated and unsaturated hydrocarbons containing from 1 to 7 carbon atoms per molecule;

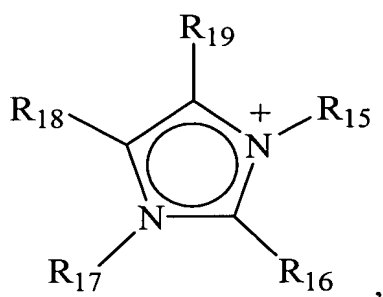
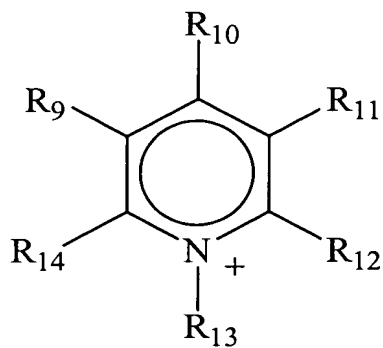
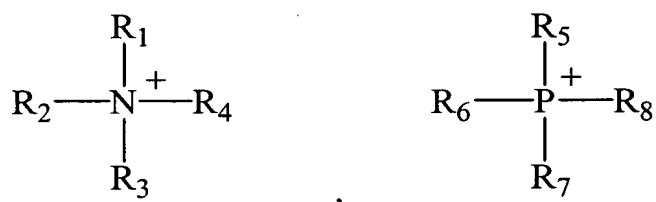
R<sub>4</sub>, R<sub>8</sub>, R<sub>9</sub>, R<sub>10</sub>, R<sub>11</sub>, R<sub>12</sub>, R<sub>13</sub>, R<sub>14</sub>, R<sub>15</sub>, R<sub>16</sub>, R<sub>17</sub>, R<sub>18</sub>, and R<sub>19</sub> are selected from the group consisting of saturated and unsaturated hydrocarbons containing from 1 to 7 carbon atoms per molecule, and hydrogen.

7. (previously presented) A catalyst system in accordance with claim 6 wherein said anion is selected from the group consisting of AlCl<sub>4</sub><sup>-</sup>, Al<sub>2</sub>Cl<sub>7</sub><sup>-</sup>, Al<sub>3</sub>Cl<sub>10</sub><sup>-</sup>, GaCl<sub>4</sub><sup>-</sup>, Ga<sub>2</sub>Cl<sub>7</sub><sup>-</sup>, Ga<sub>3</sub>Cl<sub>10</sub><sup>-</sup>, ZnCl<sub>3</sub><sup>-</sup>, FeCl<sub>3</sub><sup>-</sup>, FeCl<sub>4</sub><sup>-</sup>, Fe<sub>3</sub>Cl<sub>7</sub><sup>-</sup>, PF<sub>6</sub><sup>-</sup>, and BF<sub>4</sub><sup>-</sup>.

8. (original) A catalyst system in accordance with claim 6 wherein said ionic liquid has the formula R<sub>1</sub>R<sub>2</sub>R<sub>3</sub>NH<sup>+</sup>Al<sub>2</sub>Cl<sub>7</sub><sup>-</sup>.

9. (original) A catalyst system in accordance with claim 6 wherein said ionic liquid has the formula (CH<sub>3</sub>)<sub>3</sub>NH<sup>+</sup>Al<sub>2</sub>Cl<sub>7</sub><sup>-</sup>.

10. (currently amended) A catalyst system in accordance with claim 1 wherein a Group 8-10 (~~VIII~~) metal compound is dispersed in said ionic liquid.
11. (currently amended) A catalyst system in accordance with claim 10 wherein said Group 8-10 (~~VIII~~) metal compound comprises a platinum compound.
12. (withdrawn) A process comprising:
- a) contacting, under conversion conditions, a hydrocarbon feed stream comprising a C<sub>5</sub> paraffin and an initiator with a catalyst system comprising an ionic liquid dispersed on a support; and
  - b) withdrawing a product stream comprising a C<sub>4</sub> paraffin and at least one C<sub>6</sub> paraffin.
13. (withdrawn) A process in accordance with claim 12 wherein said support has an average pore diameter greater than about 225 Å.
14. (withdrawn) A process in accordance with claim 12 wherein said support has a surface area less than about 700 m<sup>2</sup>/gram.
15. (withdrawn) A process in accordance with claim 12 wherein said support is non-crystalline.
16. (withdrawn) A process in accordance with claim 12 wherein said support is non-crystalline, has an average pore diameter greater than about 225 Å, and has a surface area less than about 700 m<sup>2</sup>/gram.
17. (withdrawn) A process in accordance with claim 12 wherein said support is silica.
18. (withdrawn) A process in accordance with claim 12 wherein said ionic liquid comprises a cation and an anion; wherein said cation is selected from the group consisting of ions defined by the formulas:



and combinations of any two or more thereof, wherein:

$\text{R}_1$ ,  $\text{R}_2$ ,  $\text{R}_3$ ,  $\text{R}_5$ ,  $\text{R}_6$ , and  $\text{R}_7$  are selected from saturated and unsaturated hydrocarbons containing from 1 to 7 carbon atoms per molecule;

$\text{R}_4$ ,  $\text{R}_8$ ,  $\text{R}_9$ ,  $\text{R}_{10}$ ,  $\text{R}_{11}$ ,  $\text{R}_{12}$ ,  $\text{R}_{13}$ ,  $\text{R}_{14}$ ,  $\text{R}_{15}$ ,  $\text{R}_{16}$ ,  $\text{R}_{17}$ ,  $\text{R}_{18}$ , and  $\text{R}_{19}$  are selected from saturated and unsaturated hydrocarbons containing from 1 to 7 carbon atoms per molecule, and hydrogen; and

wherein said anion is selected from the group consisting of halides of: Group IIIA metals, copper, zinc, iron and phosphorus.

19. (withdrawn) A process in accordance with claim 18 wherein said anion is selected from the groups consisting of  $\text{AlCl}_4^-$ ,  $\text{Al}_2\text{Cl}_7^-$ ,  $\text{Al}_3\text{Cl}_{10}^-$ ,  $\text{GaCl}_4^-$ ,  $\text{Ga}_2\text{Cl}_7^-$ ,  $\text{Ga}_3\text{Cl}_{10}^-$ ,  $\text{CuCl}_2^-$ ,  $\text{Cu}_2\text{Cl}_3^-$ ,  $\text{Cu}_3\text{Cl}_4^-$ ,  $\text{ZnCl}_3^-$ ,  $\text{FeCl}_3^-$ ,  $\text{FeCl}_4^-$ ,  $\text{Fe}_3\text{Cl}_7^-$ ,  $\text{PF}_6^-$ , and  $\text{BF}_4^-$ .

20. (withdrawn) A process in accordance with claim 18 wherein said ionic liquid has the formula  $\text{R}_1\text{R}_2\text{R}_3\text{NH}^+\text{Al}_2\text{Cl}_7^-$ .

21. (withdrawn) A process in accordance with claim 18 wherein said ionic liquid has the formula  $(\text{CH}_3)_3\text{NH}^+\text{Al}_2\text{Cl}_7^-$ .

22. (withdrawn) A process in accordance with claim 12 wherein said hydrocarbon feed stream comprises at least 50 weight-% isopentane, based on the total weight of said hydrocarbon feed stream.

23. (withdrawn) A process in accordance with claim 12 wherein said hydrocarbon feed stream comprises in the range of from about 50 to about 95 weight-% isopentane, based on the total weight of said hydrocarbon feed stream.

24. (withdrawn) A process in accordance with claim 12 wherein said hydrocarbon feed stream comprises in the range of from about 80 to about 98.5 weight-% isopentane, based on the total weight of said hydrocarbon feed stream.

25. (withdrawn) A process in accordance with claim 12 wherein said conversion conditions include a temperature in the range of from about 100°F to about 1000°F.

26. (withdrawn) A process in accordance with claim 12 wherein said conversion conditions include a temperature in the range of from about 140°F to about 250°F.

27. (withdrawn) A process in accordance with claim 12 wherein said conversion conditions include a temperature in the range of from about 150°F to about 220°F.

28. (withdrawn) A process in accordance with claim 12 wherein said C<sub>4</sub> paraffin of said product stream is isobutane and said C<sub>6</sub> paraffin of said product stream is a hexane isomer.

29. (withdrawn) A process in accordance with claim 12 wherein said initiator is selected from the group consisting of: 1) an olefin having in the range of from 2 to 20 carbon atoms per molecule, 2) an alkyl halide wherein said alkyl halide has in the range of from 2 to 20 carbon atoms per molecule, and combinations thereof.